REMARKS

Claim 27 and 32 have been canceled. Claims 28, 30 and 31 have been amended. Therefore, claims 18-26 and 28-31 are pending in the application. Reconsideration is respectfully requested in light of the following remarks.

Double Patenting Rejections:

The Examiner rejected claims 18-21, 27 and 30 under the judiciary created doctrine of obviousness-type double patenting as being unpatentable over claim 21 of U.S. Pat. No. 6,599,810. A terminal disclaimer to obviate this double patenting rejection has been filed along with this response. Accordingly, Applicant respectfully requests removal of this double patenting rejection.

The Examiner rejected claims 22-26, 27, 31 and 32 under the judiciary created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5, 6 and 8 of U.S. Pat. No. 6,433,400. A terminal disclaimer to obviate this double patenting rejection has been filed along with this response. Accordingly, Applicant respectfully requests removal of this double patenting rejection.

Section 102(a) Rejection:

The Examiner rejected claims 18-21, 27 and 30 under 35 U.S.C. § 102(a) as being anticipated by Son et al. (U.S. Patent 5,904,538) (hereinafter "Son"). Applicants respectfully traverse this rejection on the ground that Son is not a prior art reference. The § 102(a) prior art date of the Son patent is the date that the Son patent was made available to the public, which was its issue date of May 18, 1999. *See* M.P.E.P. § 2126. Since Son's § 102(a) prior art date is well after the filing date of the present application, the rejection under 35 U.S.C. § 102(a) is clearly improper.

Note also that Son does not qualify as prior art under 35 U.S.C. § 102(e). The present application is a division of application no. 08/923,181 (now U.S. Pat. 5,891,787) filed September 4, 1997. Thus, the effective filing date of the present application is September 4, 1997. Son's foreign priority date cannot be used as its § 102(e) prior art date. *See* M.P.E.P. § 2136.03. Thus, Son's § 102(e) date is its U.S. filing date of September 4, 1997, which is the same date as the effective filing date of the present application. However, 35 U.S.C. § 102(e) requires that the reference patent be "filed in the United States before the invention by the applicant". Since the Son patent was filed in the United States on the same day as, not before, the effective filing date of the present application, Son is not a prior art reference under 35 U.S.C. § 102(e).

Section 102(e) Rejection:

The Examiner rejected claims 22-27, 31 and 32 under 35 U.S.C. § 102(e) as being anticipated by Gardner et al. (U.S. Patent 5,811,347) (hereinafter "Gardner"). Applicants respectfully traverse this rejection in light of the following remarks.

In regard to claims 22-26, the Examiner has failed to establish a *prima facie* case of anticipation because, contrary to the Examiner's assertion, Gardner does not teach barrier atoms arranged within the semiconductor substrate beneath a spacer that extends above a portion of the semiconductor substrate between the trench and a sidewall surface of a masking layer. The Examiner refers to FIG. 8 of Gardner. However, the nitrogen species 119 (shown by X's in FIG.8) are not arranged beneath a spacer that extends above a portion of the semiconductor substrate between the trench and a sidewall surface of a masking layer. The Examiner asserts that layer 104 in FIG. 8 of Gardner is a spacer that extends above a portion of the semiconductor substrate between the trench and a sidewall surface of a masking layer. The Examiner's interpretation of layer 104 in Gardner is clearly incorrect. Gardner's layer 104 does not extend between the trench and a sidewall surface of a masking layer. Furthermore, the nitrogen species 119 (shown by X's in FIG.8) are not arranged beneath layer 104. Thus, contrary to the Examiner's assertion, Gardner does not teach barrier atoms arranged

within the semiconductor substrate beneath a spacer that extends above a portion of the semiconductor substrate between the trench and a sidewall surface of a masking layer. Therefore, the rejection of claims 22-26 is improper and removal thereof is respectfully requested.

Claim 27 has been canceled.

The Examiner indicated that claim 28 would be allowable if rewritten in independent form. Claim 28 has been amended into independent form. Thus, Applicants assert that claims 28 and 29 are in condition for allowance.

Claim 30 has been amended into independent form. The Examiner has not cited any prior art that teaches implanted silicon atoms arranged within the semiconductor substrate at each of the opposing edges of the trench isolation structure, wherein the implanted silicon atoms fill vacancies and interstitial sites within the semiconductor substrate resulting from formation of the trench isolation structure. Thus, Applicants assert that claims 30 and 31 are in condition for allowance.

CONCLUSION

Applicants submit the application is in condition for allowance, and notice to that effect is respectfully requested.

If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5500-05001/RCK.

Also enclosed herewith are the following items:

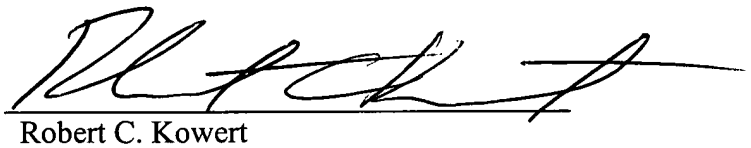
☒ Return Receipt Postcard

☐ Petition for Extension of Time

☐ Notice of Change of Address

☒ Two Terminal Disclaimers

Respectfully submitted,



Robert C. Kowert
Reg. No. 39,255
ATTORNEY FOR APPLICANT(S)

Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C.
P.O. Box 398
Austin, TX 78767-0398
Phone: (512) 853-8850

Date: March 30, 2005